ENTOMOLOGICAL NEWS

FEBRUARY 1944

Vol. LV **No. 2**

CONTENTS

Obituary—Frank E. Lutz 29
Chamberlin—Some centipeds from Georgia 32
Obituary—E. P. Felt 35
Rehn—Tachycines asynamorus in America 36
Correction 39
Darlington—Rearing notes on Gracillaria sassafrasella 40
Groskin—A Formica sanguinea raid 42
Rau—The Monarch butterfly in Mexico 44
Benesh—A new Dorcus from Mexico 45
Freeman—A new subspecies of Polites themistocles 47
Rau—Another use for the cockroach 49
Muma & Jeffers—Unusual nests of Trypoxylon 50
Notes and News in Entomology 51
Current Entomological Literature 53

PUBLISHED MONTHLY, EXCEPT AUGUST AND SEPTEMBER, BY
THE AMERICAN ENTOMOLOGICAL SOCIETY
PRINCE AND LEMON STS., LANCASTER, PA.
AND
THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA 3, PA.

Subscription, per yearly volume of ten numbers: $3.00 domestic; $3.30 foreign; $3.15 Canada. Entered as second-class matter April 19, 1943, at the post office at Lancaster, Pa., under the Act of March 3, 1879. Acceptance for mailing at the special rate of postage prescribed for in Section 1, Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

ENTOMOLOGICAL NEWS is published monthly, excepting August and September, by The American Entomological Society at 1900 Race Street, Philadelphia 3, Pa., U. S. A.

PHILIP P. CALVERT, Editor Emeritus. Editorial Staff: E. T. CRESSON, JR., E. J. F. MARX, J. A. G. REHN, A. G. RICHARDS, JR., and R. G. SCHMIEDER.

Subscription price, per yearly volume of 10 numbers: Domestic, $3.00; Foreign, $3.30; Canada, $3.15—U. S. Currency.

SUBSCRIPTIONS, ADVERTISEMENTS: All communications and remittances to be addressed to **ENTOMOLOGICAL NEWS, 1900 Race Street, Philadelphia 3, Pa.**

ADVERTISING RATES: Full width of page. Payments in advance.

	1 Inch	2 Inches	3 Inches	6 Inches
One Issue	$1.00	$ 1.90	$ 2.75	$ 4.80
Five Issues	4.50	8.50	12.00	21.00
Ten Issues	8.00	15.00	21.00	36.00

MANUSCRIPTS and all communications concerning same should be addressed to **A. G. Richards, Jr., Zoological Laboratory, University of Pennsylvania, Philadelphia 4, Pa.**

The receipt of all papers will be acknowledged and, if accepted, they will be published as soon as possible. If not accepted, authors will be so advised and postage requested for return of manuscripts. Articles longer than six printed pages may be published in two or more installments, unless the author is willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

Proof will not be sent to authors, so manuscripts must be in final form for printing.

ILLUSTRATIONS will be published at the author's expense as follows: Cost of engraving plus cost of printing text-figures exceeding 2 inches in height; or plus cost of printing insert plates. The size of text-figures or plates when printed must not exceed 4 x 6 inches.

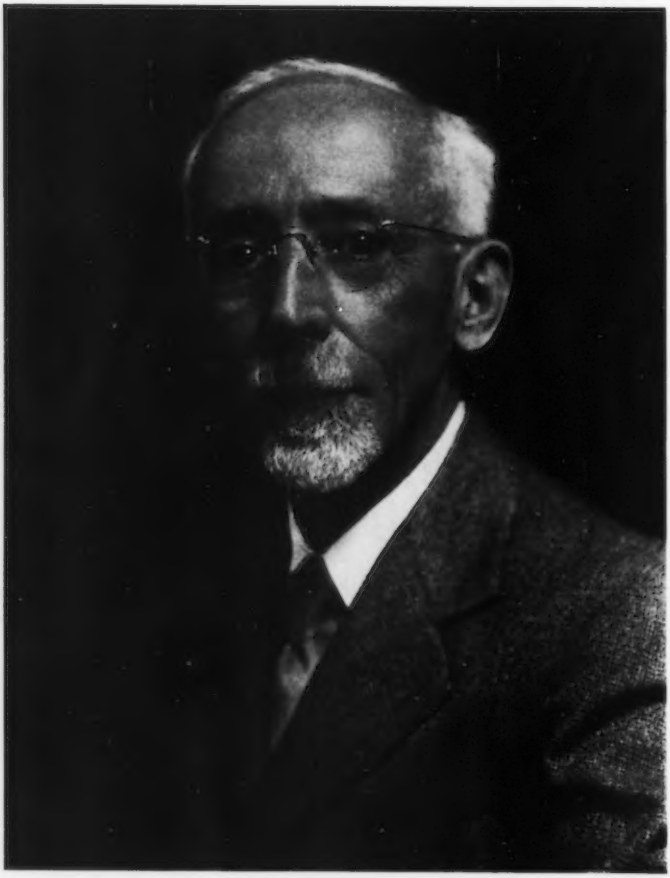
All blocks will be sent to authors after publication. It is not advisable to print half-tones as text-figures.

TABLES: Authors will be charged the setting of all tables exceeding 2 inches in height.

SEPARATA: Twenty-five extras of an author's contribution will be given free. They will be "run of form," without removal of extraneous matter, folded but not bound, uncut and without cover.

Authors wishing more than the 25 separates must so advise the Editor or the printer. See bottom of this page. The Editor requests that authors state the number of separates desired in a letter accompanying their manuscript.

SEPARATES of articles without covers, without extraneous matter, will be furnished by the printer at the following prices: 1–4 pages, 25 copies, $2.50; 50 copies, $2.50; 100 copies, $3.00. 5–8 pages, 25 copies, $4.00; 50 copies, $4.00; 100 copies, $4.75. 9–12 pages, 25 copies, $6.25; 50 copies, $6.25; 100 copies, $7.25. Covers: first 50, $2.75; additionals at 2 cents each. Plates, printed on one side: first 50, $2.00; additionals at 1½ cents each. Transportation charges will be extra. THE LANCASTER PRESS, INC., Lancaster, Pa.



Frank E. Lutz

ENTOMOLOGICAL NEWS

VOL. LV FEBRUARY, 1944 No. 2

FRANK E. LUTZ

With the death on November 27, 1943 of Doctor Frank E. Lutz, for more than twenty years chairman and curator of the Department of Insects and Spiders in the American Museum, entomology lost one of its most creative and clear-visioned leaders, a man unusually enterprising and ingenious, with a driving faith in the value of his science, and aptitude and devotion in exploring its problems.

His administrative duties, which included not only the direction of the work of his own department but for many years also the editorial supervision of the scientific publications of the American Museum, were always discharged with ability and conscientiousness and often proved very time-consuming. Yet by concentration of effort, by extending his working day into the night, and by foregoing vacations (for no vacation could have approached in zestfulness the particular piece of research that at any given time absorbed his attention) he made more than one hundred contributions to science that gave new stimulus to those engaged in research as well as indicating to the layman how interesting insects can be.

His early papers—those that belong to the period from 1904 to 1909, when he was connected with the Station for Experimental Evolution of the Carnegie Institution—were in large part devoted to problems in genetics and biometry. He was an early champion of the fruit fly in the study of heredity and the discoverer of the first white-eyed individual, thus giving impulse to the subsequent vast researches of Professor T. H. Morgan and his associates.

Subjects that led beyond entomology to the borderland of other sciences particularly intrigued him. The book-shelves were weighed down with works on insect-flower relations, but the authors had all interpreted the colors of flowers in terms of human vision. Doctor Lutz not only demonstrated convincingly that insects see ultra-violet but he proved by photography with the aid of color filters that there are ultra-violet patterns in flowers, thus opening up a tremendous new field of research. Insect sounds interested him no less than insect sight. He pointed the way for making accurate studies of the chirps of insects by obtaining sound records of crickets and then analyzing these records through a hand lens.

In the Loomis Laboratory in Tuxedo, New York, where the equipment offers unique opportunities for experimentation, he was able to demonstrate that insects can survive sudden and extreme changes of air-pressure far transcending the limits that prove fatal to man. Yet for many of his experiments he created his own equipment. He was a born inventor although his ambitions did not take a commercial turn. Sometimes, I believe, he got as much delight from overcoming the mechanical difficulties that beset his investigations as he did from the scientific results. One of his many gadgets that startled everybody by the ingenuity and nicety of its construction was a "squirrel-wheel" so marvelously balanced and light that it would start to turn at the pressure of a tiny insect walking within.

It is difficult to single out from his diversified contributions this or that as indicative of his many-sided attainments. He was exceedingly versatile and his inquiring mind could work with calm and clarity even when—as often in his later years—he was running a fever. He wrote on the curious string figures of the Patomana Indians of British Guiana, which he had observed during his trip to Kaieteur Falls; his first contribution to the publications of the American Museum was A Brief History of Antarctic Exploration. He could write for the lay public as well as for the scientist. His Field Book of Insects became a standard work of reference in tens of thousands of

households. A Lot of Insects presented with equal lucidity his experiences primarily with insects of his garden and home laboratory.

What he himself published was only a small part of what he actually put in motion. Many a time he would generously hand over to another worker investigations in which he had already laid the foundations. On all occasions he tried to enrich the lives of others by making them cognizant of the wealth of interest he had found in every phase of entomology. He was never, however, an intrusive enthusiast. He won people rather by his quiet candor, his complete sincerity, and not least by his apt and at times tart and roguish humor. He was an understanding companion not only in the office but in the field as I can testify from five collecting trips shared with him. His rambles had taken him to Mexico, British Guiana, Florida, Cuba, Puerto Rico, the Rocky Mountain region, the Canal Zone, Texas, and California. To some of these areas he had gone repeatedly. He was impressed with the distinctive quality of each, but boyhood recollections of the green mountains about his birthplace at Bloomsburg, Pennsylvania, or impressions of his beloved home environment at Ramsey, New Jersey, sometimes made him challenge the attractiveness of other regions. He preferred the simple beauty of rural landscapes to the grandiose in nature. One of the hills adjoining his Station for the Study of Insects at Tuxedo, New York, he renamed affectionately "My Mountain." It was at this station that during successive summers and with the genial cooperation of his family group he devoted himself to guiding the entomological interests of a picked group of youngsters, many of whom have since brought to flower the teachings he implanted. At this station, too, he put into operation his nature-trail idea—the construction of a trail that should lead by the significant botanical and zoological exhibits that nature unsolicited had provided in a given area. He thus extended Museum exhibition to the out-of-doors. The idea was subsequently widely applied throughout the land.

In the Hall of Insect Life at the American Museum he exemplified the inexhaustible field of interest that insects offer.

Instead of presenting a mere Noah's Ark assemblage of species, two by two, male and female, such as had been the custom of the past, he selected his examples and arranged his material so as to bring out the significance of insect life, to illustrate biological principles, to stimulate thought and answer questions. He so infused the Hall of Insect Life with the vitality of his thought that it fully justified its name although much of it was static. But he went a step further in making things realistic by introducing mechanical devices and even live exhibits. He was proud of his insect zoo, which had perennial as well as seasonal exhibits, with insects demonstrating their characteristic activities for close-up observation. Here were shown the indigenous species of field and pond along with cockroaches, tarantulas, and scorpions from regions as remote at Barro Colorado Island in the Canal Zone, one of his favorite places of visit.

The passing at the age of sixty-four of so many-sided a personality leaves a great void. Happily, however, the work men do and the influence they exert during their lifetime survive to guide and inspire those who follow. HERBERT F. SCHWARZ, American Museum of Natural History.

Some Centipeds from Georgia

By RALPH V. CHAMBERLIN, University of Utah

These notes are based upon a small collection of chilopods made by my associate Wilton Ivie incidentally to his collecting of spiders in April, 1943. Most of the material was taken near Savannah. The holotypes of the two new species described are in the author's collection.

Cryptops hyalinus (Say)

Sylvania to Sardis, Apr. 20, 1 mi. west of Sylvania, Apr. 7; 1 mi. north of Sylvania, Apr. 10; and 3 mi. southeast of Savannah, Apr. 8.

Theatops posticus (Say)

One mi. north of Sylvania; 3 mi. southeast of Savannah; and southeast of Pendergrass, Apr. 23, 1943.

Theatops spinicaudus (Wood)

Lula, Apr. 24.

Seolopendra viridis Say

Southeast of Pendergrass, Apr. 23.

Sogona minima Chamberlin

Three miles southeast of Savannah, Apr. 4 and 14; southeast of Tocoa, Apr. 29.

Arenophilus bipuncticeps (Wood)

Brier Creek, Apr. 12; three miles southeast of Savannah, Apr. 4; and Millen, Apr. 6.

Pachymerium ferrugineum (C. L. Koch)

Eight miles west of Savannah, Apr. 5; north of Springfield, Apr. 6; and 1 mi. north of Sylvania, Apr. 10.

Geophilus mordax Meinert

Three miles south of Savannah, Apr. 6; Millen, Apr. 16; and Demorest, Apr. 26.

Geophilus rubens Say

Three miles southeast of Savannah, May 3; and between Sylvania and Sardis, Apr. 20.

Nampabius georgianus Chamberlin

Eight miles west of Savannah, Apr. 5; and 3 miles southeast of this city, Apr. 8; Demarest, Apr. 26; and northeast of Lula, Apr. 26.

Sozibius paurops new species

Body and appendages having the uniform light yellow color usual in species of the genus. Antennae short, composed in the holotype of 30 short and very short articles. Apparently char-

acterized among other species by the smaller eyes in which the ocelli are fewer in number and arranged in two series instead of in 3 or 4; e.g., 1 + 3, 2; single ocellus not enlarged, contiguous with series. Prosternal teeth 4 + 4 or 5 + 5; small, uniform. Posterior angles of none of dorsal plates produced. Coxal pores small circular, 3, 4, 4, 4. Spines of first and second legs below, 0, 0, 2, 1, 1; above, 0, 0, 0, 1, 1. Ventral spines of anal legs, 0, 1, 3, 2, 0; dorsal, 1, 0, 3, 1, 0; claw single. Dorsal spines of penult legs, 1, 0, 2, 1, 1; ventral, 1, 3, 3, 1; claws, 2. Claw of female gonopods strictly entire; basal spines 2 + 2.

Length, 8.5 mm.

Type Locality.—GEORGIA: Dermorest, Apr. 26, 1943; female holotype and male paratype; southeast of Pendergrass, Apr. 23, 1943, male allotype; Clarkesville to Tocoa, Apr. 28.

Agrees with *S. providens* in having the claw of the female gonopods entire but differs in the notably fewer ocelli and in the spining of the anterior legs.

Georgibius new genus

Differing from *Sonibius* and agreeing with *Enarthrobius* in not having the articles of the antennae fixed at 20, the number in the genotype being above 30. Differing from *Enarthrobius* in the anal legs of the male which are conspicuously crassate with the fourth joint longitudinally furrowed but lacking the characteristic lobe present in *Enarthrobius*. Prosternal teeth 2 + 2. Posterior angles of 9th, 11th and 13th dorsal plates produced. Tarsi of all legs distinctly biarticulate.

Genotype.—*Georgibius georgiae* new species.

Georgibius georgiae new species

Dorsum and antennae dark brown. Legs with tarsus, or some with tibia and tarsus a brighter yellow than more proximal joints. Antennae of medium length, composed of 32 articles. Eyes with ocelli in 2 series, 1 + 4, 4, single ocellus large, contiguous. Prosternal teeth 2 + 2, pale; with line of apices straight; median incision v-shaped; ectal seta on each side slender. Coxal pores round, uniseriate, 3, 4, 4, 4. Ventral spines

of first legs, 0, 0, 1, 2, 1; dorsal, 0, 0, 2, 1, 1. Ventral spines of penult legs, 0, 1, 3, 3, 2, dorsal, 0, 3, 1, 1; claws 2. Ventral spines of anal legs, 1, 1, 3, 2, 0; dorsal, 1, 0, 3, 1, 0; claw single. Only the last pair of coxae laterally armed. Fourth article of anal legs of male crassate, abruptly thicker than the fifth article, somewhat planate above with the longitudinal furrow rather deep but not reaching caudal end of article.

Length, 10 mm.

Type Locality.—GEORGIA: Brier Creek, 7 miles north of Sylvania. One male taken April 12, 1943.

Neolithobius xenopus (Bollman)

Brier Creek (7 mi. north of Sylvania), Apr. 12; 1 mi. north of Sylvania, Apr. 10; Millen, Apr. 16; 3 mi. southeast of Savannah, Apr. 14; and Lula, Apr. 26.

Both males and females are represented. The species was previously known only from a single specimen, the male holotype.

Scutigera coleoptrata (Linne)

Northwest of Elberton, Apr. 30.

Obituary

Dr. E. P. Felt died December 14, 1943, at the age of 75 years. He was stricken suddenly by a heart attack while working in his office at the Bartlett Tree Research Laboratories. Dr. Felt was widely known from his 30 years as New York State Entomologist and his many scientific papers. He was an authority on woodland and park insects, a specialist on gall-forming insects, a member of numerous entomological commissions and societies, and a past president of the American Association of Economic Entomologists.

The Rhaphidophorid Tachycines asynamorus Adelung in America (Orthoptera, Gryllacrididae, Rhaphidophorinae)

By JAMES A. G. REHN, The Academy of Natural Sciences of Philadelphia

In 1898 S. H. Scudder briefly reported [1] the capture in greenhouses in Minnesota of a striking and spidery rhaphidophorid camel-cricket, which he considered to be an introduction of the Japanese *Diestrammena marmorata* (De Haan). Otto Lugger, who had sent the specimens to Scudder, the same year gave more details of the occurrence of the insect,[2] which had been captured in the conservatory of the Minnesota State University at Minneapolis. Since that time there have appeared in the literature numerous records, as *D. marmorata* and also as the related *D. unicolor,* of the occurrence of this rhaphidophorid in greenhouses or cellars, and even in wells, at a considerable number of localities distributed over the northern portion of the United States east of the Rocky Mountains, extending from Maine and New Jersey to the Dakotas and Colorado, south to Tennessee. It has also been reported from Ontario, Canada.

Morse in his classic "Orthoptera of New England" has given us [3] by far the best picture of the habits and actions of the species as it occurs with us. The same year, 1920, Blatchley noted [4] that De Haan's 1842 name *Locusta* (*Rhaphidophorus*) *marmorata,* based on Japanese material, was a primary homonym of *Locusta marmorata* Harris, 1841,[5] and renamed the species *Diestrammena japanica,* the latter spelling apparently being a lapsus calami for *japonica.*

Unfortunately the failure by American students to correlate the determinations of this insect with conclusions then being published by European workers, was responsible until later than 1920 for the continued and erroneous reference of the

[1] Psyche, VIII, p. 180.
[2] Third Rep. Entom. Minn., p. 254, fig. 166.
[3] Page 377, (1920).
[4] Orth. of N. E. Amer., p. 611, (1920).
[5] Report Ins. Mass. Inj. Veget., p. 145.

species as occurring in America to *Diestrammena,* and specifically to *D. marmorata.* In 1902 Nicolas de Adelung, the distinguished Russian orthopterist, described as a new genus and species, *Tachycines asynamorus,* a rhaphidophorid which had been found in greenhouses at St. Petersburg (the present Leningrad), Russia.[6] He also reported that species as occurring in palm conservatories at Lubeck, Germany, and Brussels, Belgium. In 1914 Lucien Chopard, who had previously reported *Diestrammena marmorata* from greenhouses in France, corrected his previous determination and stated [7] this material and other individuals from similar situations at localities in Hungary, Austria, Germany, France and England represented instead Adelung's *Tachycines asynamorus.* He also reported having examined material of this species taken under natural conditions ("en plein air" as he subsequently commented) in Szechuan Province, China. At the same time he suggested that the *Diestrammena* reported from the United States might instead be this genus and species. The same author in 1916 presented tables for the separation of the genera *Diestrammena* Brunner and *Tachycines* Adelung, and also for the identification of the then known species of the two genera.[8] In 1921 he expressed the opinion that *T. asynamorus* had originated in Japan,[9] but in 1938 he was more inclined [10] toward his earlier belief that Szechuan was its probable native home.

In 1920 Karny [11] examined De Haan's unique female type of *Locusta* (*Rhaphidophorus*) *marmorata,*[12] in the Leyden Museum, and showed that it is a true *Diestrammena,* differing from *Tachycines* in the caudal tibial characters which Chopard in 1916 [13] gave to distinguish the two genera. We now know that both genera occur in Japan, and elsewhere in eastern Asia.

[6] Ann. Mus. Zool. Acad. Imp. Sci. St. Pétersb., VII, pp. 56, 59, text-figs. *a* & *b.*
[7] Bull. Mus. Hist. Nat. Paris, 1914, no. 4, pp. 1–2.
[8] Bull. Soc. Entom. France, 1916, pp. 154–159.
[9] Bull. Soc. Entom. France, 1921, p. 209.
[10] "La Biologie des Orthoptères" (Encycl. Entom., XX), pp. 117–118.
[11] Zool. Mededeel., V, p. 142.
[12] In Temminck, Verhandl. Natuur. Geschied. Nederl. Overz. Bezitt., Bijd. Kenn. Orthopt., p. 217, (1942).
[13] Bull. Soc. Entom. France, 1916, pp. 154–156.

Of American workers Hebard was the first to point out in print[14] that the *"Diestrammena marmorata"* of American authors is *Tachycines asynamorus,* although Morse in 1920 had noted[15] that the species for which he used the name *D. marmorata* had "been recorded from many places in Europe by Chopard as the *Tachycines asynamorus* of Adelung." Hebard in the same paper synonymized Blatchley's *Diestrammena japanica* under *Tachycines asynamorus,* apparently on the grounds that Blatchley's description and figure (the latter taken from Lugger) refer to the latter genus and species. Karny, however, has taken issue[16] with this action, and considers that Blatchley's name, which Karny emends to *japonica,* as he regarded *japanica* as meaningless and a lapsus, must replace De Haan's *marmorata,* which is preoccupied by that of Harris, as shown above. While all the material Blatchley knew is definitely *Tachycines asynamorus* and not the species named by De Haan, the former made the very exact and definite statement that "a new specific name is therefore necessary for De Haan's insect," and this name he there supplied. The majority of my taxonomic colleagues feel that, regardless of what he had before him, Blatchley's direct statement regarding what he was renaming is conclusive. This opinion makes Blatchley's *japonica,* as emended by Karny, the proper name for the Japanese *Diestrammena* called *marmorata* by De Haan, and as such it has consistently been used by Karny. That author noted in the same 1930 paper that *T. asynamorus* had been taken by Tarbinsky under natural conditions in coniferous forest in the Government of Viatka (the present Kirov), European Russia.

My present interest in *Tachycines* was occasioned by a request for determination placing in my hands a small series which had been taken in the cellar of a house in Philadelphia in September, 1943. The insects were there in sufficient abundance to warrant a call for advice in controlling them. This is the first occurrence known to me of the species in the immediate Philadelphia area, or in fact in Pennsylvania.

[14] Proc. Acad. Nat. Sci. Phila., LXXVII, p. 146, (1925).
[15] Orth. New Engl., p. 376.
[16] Ann. Nat. Hist. Mus. Wien, XLIV, p. 173, (1930).

It is now possible to remove any question as to the identity of American material with Adelung's species. In the Hebard Collection at the Academy of Natural Sciences of Philadelphia there is a topotypic (St. Petersburg) pair of *T. asynamorus,* received from the Leningrad Zoological Museum, and determined by the Russian orthopterist Dr. E. Miram, after comparison with Adelung's type material. These authentic individuals have been compared with specimens in the Philadelphia collections from Elmhurst, Long Island, New York; Philadelphia, Penna.; Springfield, Ohio; Chicago, Ill.; Wauwatosa, Wisc.; Clarksville, Tenn.; Mt. Pleasant, Iowa; Minneapolis and St. Paul, Minn.; Fargo, North Dakota, and Brookings, South Dakota. Material from nearly all of these localities has been cited in past literature, but generally as *Diestrammena marmorata,* which, however, is not known to occur in North America. In all probability *Tachycines asynamorus* will become very generally established in suitable situations over much of the United States, but due to its environmental requirements its control, when present, should not be particularly difficult. Bue and Munro [17] recently have given important notes on its habits and control in greenhouses.

In the collections at the Academy of Natural Sciences in Philadelphia we have material of several species of *Diestrammena* and of *Tachycines asynamorus* from Kyoto, Japan. This considerable series of *T. asynamorus* is inseparable from the above mentioned topotypes. Unfortunately we have no information regarding the conditions under which the species occurred at Kyoto.

Correction: In the article by F. Earle Lyman entitled "Eye-color changes in mayflies of the genus Stenonema (Ephemeridae)" (Entom. News, LIV, p. 261, Dec. 1943), the ordinal name Ephemeroptera should have been used instead of the family name Ephemeridae. The Editors.

[17] Journ. Econ. Entom., XXXII, p. 468, (1939).

Rearing Notes on Gracillaria sassafrasella (Chamb.)

By E. P. Darlington, New Lisbon, N. J.

As a fuller description of the larval history of this common under-side-miner on the leaves of sassafras might facilitate its detection, the publications of Chambers and Kearfott are herein amplified by rearing and observational records; the material being deposited at the Academy of Natural Sciences of Philadelphia.

An under side feeder on leaves of sassafras.

Larva:—When full grown will average about 8 mm. Head, light in color without distinguishing markings, I have never observed it brown as recorded by Kearfott. A notable characteristic is that the larva has but three pairs of abdominal legs; this was mentioned by Kearfott.

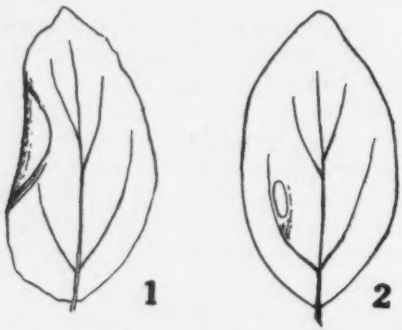


Fig. 1. Tentiform mine of the second larval stage.
Fig. 2. Split-capsule pupal case on under side of leaf.

Mine:—The linear track mine of the first stage is so inconspicuous as to escape observation, especially when it becomes nearly obliterated by the developing leaf; or when it becomes a part of the puckering tentiform mine of the second stage.

At the third stage, the larva leaves the mine near the point of its latest feeding and under-rolls the tip of a nearby young leaf; the rolling continues as the larva feeds. Occasionally it under-folds the edge of a leaf without making a roll. Seldom does it feed in the third stage on the leaf that it mined in the second stage.

In early July the larva leaves the roll, or fold, and forms a split capsule-like case on the underside of a leaf other than the one on which it was feeding; this case is firm, yellowish white, 8 mm. long and 3 mm. wide.

Thus in detail, is the larval history as outlined by Chambers. In a wire cage over a branch, attached by a muslin sleeve, the larva pupates as mentioned above, that is providing it does not pupate on the sleeve of the cage; but under natural conditions most of the larvae descend to the ground by a silken thread and pupate as recorded, in the trash. Pupation on the tree can best be detected by a slight puckering of the leaf over the pupal case.

In the Philadelphia area, larvae can be found in the rolls from the middle of June to as late as August 20th. Imagoes, from July 12th to August 20th or possibly as late as the 25th.

The moth can be easily recognized from Chambers' description but I would term the color fawn-purple, the basal color being fawn and most pronounced along the costa, especially at and near the apex of the wing. The purple varies in intensity, being quite brilliant along the dorsal margin in most specimens; in others the fawn color predominates with but small purple spots.

References

McDunnough, J. Check List of Microlep. of Can. and U. S., 1939, No. 9380.

Chambers, V. T. *Can. Ent.*, III, 1876, p. 33.

Kearfott, W. D. *Bull. Am. Mus. Nat. Hist.*, XXIII, 1907, p. 167.

An Observation of a Formica sanguinea Raid At Battle Creek, Calhoun County, Michigan (Hymenoptera: Formicidae)

By Horace Groskin, Ardmore, Pennsylvania

On August 21, 1943, at 11:30 A.M., temperature 75° F., I was in a district of residential properties, at the intersection of Oaklawn and Wood Streets, Battle Creek, Michigan, when I came upon a raid being made by the blood-red slave makers, *Formica sanguinea* subsp. *subintegra* Emery, while they were crossing a cement sidewalk in front of the corner property. The slave makers were going across the cement walk to the cut grass of the lawn, and were going in both directions; one column going to the nest being raided, while the other column was returning to their own nest, carrying in their jaws larvae, cocoons and fully adult black slaves.

The nest that was being raided was that of *Formica fusca subsericea* Say, and was located in the short grass of the lawn of the corner property, at the distance of 25 feet southeast of the cement walk. This nest was about three feet in diameter, and apparently an old nest with several entrances, the main one leading out onto a well-trodden bare ant path, about one inch wide, running through the grass for a distance of about ten feet to the bottom of a trunk of a maple tree.

The *F. sanguinea* nest was also in short grass ten feet north of the cement walk and about 35 feet from the *F. subsericea* nest. It was less than two feet in diameter with three small entrances, and was located under a tree near a street curb. Both nests were in sandy soil with fine gravel in it below the surface.

The raid was in full progress when I first observed it on the cement walk at 11:30 A.M. I estimate there were about 400 *F. sanguinea* that crossed the cement walk, going in both directions, during a period of 30 minutes, or about 200 individuals that participated in the raid.

In a period of 20 minutes, standing on the cement walk, I was able to collect 39 *F. sanguinea* and nine adult black slaves which the *sanguinea* were carrying in their jaws, as well as a number of the larvae and cocoons also being carried. One interesting pair collected together at the same time was a *sanguinea* and a *subsericea;* the latter having apparently attacked the slave maker by grasping his leg in his jaw and holding on so tenaciously that he permitted himself to be dragged through the grass to the cement walk, where both were collected together in the same position, and are still in that position in the collection.

During the raid, I was rather surprised to see the blood-red slave makers returning to their nest with fully adult *subsericea* in their jaws. From the literature I covered, describing such raids, I gained the impression that the booty usually carried off by the *F. sanguinea* was larvae and pupae, and the adults were not molested, but in this particular raid, at least 10 to 15 percent of the booty being carried across the cement walk were adult workers. It would be interesting to know if this is a regular, routine procedure, and how the newly captured adult slaves are received by the old captives already in the nest.

Before the raid was concluded, I followed the *F. sanguinea* to their nest and watched them take their booty into the nest. A number of the black slaves were loitering about the entrances to the nest and upon the arrival of some of the slave makers with their booty, these black slaves became somewhat excited, running around the entrance to the nest, while a few followed the *sanguinea* into the nest. During this observation, I also noted a number of the black slaves going off and leaving the immediate vicinity of the nest, and I wondered whether they were old slaves going out to forage, or new slaves that may have been captured earlier in the day and were now escaping.

The raid was fully concluded at 12 o'clock noon, just 30 minutes after the time it was first observed. After 12 o'clock there was not a single *sanguinea* or a *subsericea* to be seen on the cement walk or in the grass immediately around it.

The following morning, August 22, 1943, at 10:15 A.M., I made another visit to the *sanguinea* nest and watched the ants

for 20 minutes. There was no evidence of any raid at this time. The black slaves were busy bringing loads of earth out of their galleries, and several of the *sanguinea* were standing about on the tops of the blades of grass at the entrances, as if they were standing guard.

I also visited the *subsericea* nest where everything appeared quite normal. The workers were going both ways along their path to the maple tree, and a few were wandering off through the grass.

My stay at Battle Creek, Michigan, ended the following day, so no further observation was possible.

The Monarch Butterfly, Danaus plexippus L., in Mexico.

By PHIL RAU, Kirkwood, Missouri.

During a visit to Mexico in February, 1939, entering the country by way of Laredo, Texas, I saw no butterflies (even though I was alert for all insect life) along the Pan American highway.

We crossed the marker "Tropic of Cancer" near Victoria, Tamaulipas, but at the high elevations no butterflies or other insects were in the air. However, as we dipped down to low elevations, several species of butterflies were observed, the most abundant as well as the most conspicuous, were the Monarch butterflies, *Danaus plexippus* L. [H. I. O'Byrne]. They were flying in the sunshine and feeding on the flowers at two localities; at Tamazunchale, S. L. P., 350 feet above sea-level, and at Igula, Guerrero, 2700 feet above sea-level.

A note by Bromley (ENTOMOLOGICAL NEWS, March, 1928, p. 96) states that in January, 1924, he saw in the Everglades, between West Palm Beach and Lake Okeechobee, great numbers of Monarch butterflies, some of which were in the air, some alighting on flowers, and some mating. He thinks that the great throngs that he observed were migrants in their winter quarters, and it is quite likely that the same may be true of those observed in Mexico.

A New Dorcus from Mexico (Coleop.: Lucanidæ) *

By Bernard Benesh, North Chicago, Ill.

The following *Dorcus,* a close relative of *D. brevis* (Say), appears to be new to entomological science; it was recently discovered among the Lucanidæ material in the collection of the late Dr. Frank J. Psota, now incorporated in collections of the Field Museum of Natural History, Chicago, Illinois. This noteworthy discovery increases the meager lucanid fauna of Mexico to five species, with distribution as follows: *Pseudolucanus mazama* (Lec.), Sonora and Chihuahua; *Cantharolethrus homoderoides* Kriesche, Mexico (probably subtropical southern Mexico); *Dorcus mexicanus* n. sp., Jalapa; *Æsalus smithi* Bates, Chilpancingo; *Æ. trogoides* Albers, Oaxaca.

Dorcus mexicanus new species

Fig. 2♂, 2a antenna ♂, 2b antenna ♀.

♂. Head, prothorax and elytra dull black, opaque; posterior of elytra showing a faint indication of brown; suture feebly shining. Head transversal, nearly twice as broad as long, depressed (in *brevis* more convex), anterior angles oblique; eyes fairly large (bigger than in *brevis*); ocular canthus parallel opposite the eyes, dividing them for two-thirds their length; clypeus nearly straight in front, broad (broader than in *brevis*), corners obtusely rounded, base distinctly delineated by an impressed line. Mandibles regularly arcuate, acute, granulate, with some fairly large punctures, rounded on the exterior margin; at the middle of the inferior margin with two denticles and, above these, on the dorsal area an oblong, conical tooth. Antennæ short and slender, finely granulate, including the sensory area of clava, feebly shining; scape as long as funicle and clava together, black; funicle twice as long as the clava, piceous; clava three-jointed, rufous, with eighth and ninth segments produced

* The writer desires to express his deep appreciation to Mr. W. J. Gerhard and Mr. Henry Dybas, of the Field Museum, for the opportunity to study this material.

into a lobe, of which only the apices are pubescent, ultimate segment ovate in outline, with several marginal setæ. Prothorax transverso-quadrate, anterior angles produced and acutely rounded, sides gradually diverging to posterior fourth, basal angles abruptly rounded, base nearly straight; punctuation cribriform throughout. Scutellum heart shaped, broader than long, apex pointed, with several unequal punctures. Elytra one-third longer than wide, sides nearly parallel to posterior third, thence attenuated to apex, with basal half reticulate and remainder closely cribrate. Legs fairly short; intermediate and posterior tibiæ with a spine near the apical third. Beneath, mentum broadly arcuate in front, rounded on sides, with large confluent pits; palpi blood-red. Abdominal segments feebly emarginate, covered in the middle by remote punctures, which become larger and confluent towards lateral margins.

♀. In habitus resembling the male, but much broader (exceeding in width even ♀ *brevis*); clypeus narrower than in male, bilobed; cephalic tubercles well developed (represented in *brevis* by broadly spaced gibbosities), close; occipital area impunctate, shining; mandibles trigonate in cross section, porrect, acute, apex slightly bent inward, outer margin strongly carinate, inferior margin with a single median tooth, upper area with a longitudinal ridge, produced in center. Disc of pro-

notum with a median flattened area, extending from front margin to base. Clypeus and front of head reddish-brown; apex of clypeus margined with black; base of head and prothorax rufous; scutellum black; elytra reddish-brown, suture black; sculpture similar to male's, but much coarser, especially the lateral margins of pronotum and elytra; prothorax and elytra shining.

Relative size of *Dorcus mexicanus* n. sp., and *D. brevis,* used for comparison:

	D. mexicanus n. sp.		*D. brevis* (Say)	
	♂	♀	♂	♀
Length (incl. mandibles)	19 mm.	20 mm.	18.5 mm.	20 mm.
		width + length (in millimeters)		
head	5.6 + 3.0	5.5 + 3.0	5.75 + 3.0	5.4 + 2.5
pronotum	7.5 + 4.5	8.3 + 4.0	7.5 + 4.5	7.75 + 4.75
elytra	7.2 + 10.5	8.8 + 11.5	7.5 + 10.0	8.0 + 11.0

Holotype: ♂, Jalapa, MEXICO. Cotype: ♀, without data. Both in the Field Museum of Natural History, Chicago, Illinois. The female example is minus entire abdomen, precluding comparison of genitalic structure with that of *brevis.*

A New Subspecies of Polites themistocles (Latreille) from British Columbia, Canada (Lepidoptera, Rhopalocera, Hesperioidea)

By H. A. FREEMAN, White Deer, Texas

Polites themistocles turneri new subspecies

This new subspecies differs from typical *themistocles* (Latreille) in the depth of coloration of the fulvous areas and spots on the upper surface of the primaries. In typical *themistocles* ♂♂, the cell area, costal margin, subapical spots and the faint spots at the outer side of the stigma are decidedly yellowish-

fulvous. These same areas and spots in *turneri* are much darker, being brownish-orange. The fringes, on both pairs of wings, are somewhat darker than in the typical species. On the under surface of the primaries the ground color and spots are darker than in typical *themistocles*. The under surface of the secondaries is also darker brown. The ♀♀ of *turneri* have the spots and costal margin on the upper surface of the primaries much darker fulvous than in the typical species. *P.t. turneri* is somewhat smaller than typical *themistocles* as comparative measurements reveal that *themistocles* ♂♂ average 27 mm. and the ♀♀ 28 mm., whereas the ♂♂ of *turneri* average 23 mm. and the ♀♀ 26 mm.

Described from 12 specimens: 3 ♂♂ and 2 ♀♀, VI–28–38, Heffley Ck., BRITISH COLUMBIA. 5 ♂♂ and 1 ♀, Jesmond, B. C., and 1 ♀, Clinton, B. C., by J. K. Jacob, during June and July, 1937–38.

The writer takes great pleasure in naming this new subspecies for Dr. J. R. Turner of Caldwell, Kansas, who is now in our armed forces.

Holotype, ♂, Jesmond, BRITISH COLUMBIA, VII–9–37 and allotype ♀, Clinton, B. C., VI–17–38 (coll. J. K. Jacob) are in the collection of the author. Ten paratypes are in the following collections: 2 ♂♂, 1 ♀, Stallings and Turner; 3 ♂♂, 1 ♀, Canadian National Museum; 1 ♂, Academy of Natural Sciences, and 1 ♂, 1 ♀, in the collection of the author.

P. themistocles occurs over nearly all the eastern United States and Canada; *turneri* is the subspecies that occurs in British Columbia and possibly other localities in western Canada and northwestern United States. *P.t. turneri* can be recognized by its darker coloration and slightly smaller size. On the upper surface *turneri* resembles *Polites mardon* Edwards but can be readily separated by the under surface of the secondaries, as *turneri* does not have the poorly defined bands of slightly darker color found in *mardon*.

Another Use for the Cockroach, Blatta orientalis.

By PHIL RAU, Kirkwood, Missouri.

One finds in entomological literature reference to many uses of the common cockroach or water-beetle, *Blatta orientalis.*

Frank Cowan in "Curious Facts in the History of Insects" (1865) gives several instances of cockroaches being given as food to pet animals, and he also gives details of the medicinal use of cockroaches for ulcers, cancers, earache, and also for killing worms in children. Miall and Denny in their book "The Structure and Life History of The Cockroach" (1886) say that in Russia, the Oriental cockroach constitutes a popular remedy for dropsy and also that cockroach tea and cockroach pills are known in the medicinal practices of Philadelphia, and that salted cockroaches are said to have an agreeable flavor, which is apparent in certain sauces.

There are no records, in so far as I know, of the Oriental cockroach being used as bait by fishermen. However, while visiting Reelfoot Lake in Tennessee, in July, 1937, I was surprised to find that the keepers of boathouses all along the lake-front keep on hand large stocks of these cockroaches. These they sell at a cent apiece to the fishermen who go after the carp-like fish known locally as "bream." Several of the men told me that these cockroaches are unexcelled for bream fishing; in fact "no other bait is as good." *

The dealers keep the live cockroaches in large wooden rain-barrels which are covered with heavy, wooden lids. They procure their stock by setting traps in the commission houses in the nearest large city, Cairo, Illinois.

The popular season for bream fishing is from April to August, although there is no law against catching them at other times. Incidentally, and I smiled to myself when I remembered it, these are the very months when the cockroaches attain their maximum growth. They die off a little later, leaving their egg-

* According to Jordan & Evermann (Amer. Food & Games Fishes, p. 349) the largest species of the sun-fish family, the Bluegill, *Leponis pallidus,* is also known as the Blue Bream.

cases, or very small nymphs. After August there evidently is no bream fishing for want of big cockroaches; the popular season for bream fishing therefore is not when the fish are at their best, but when the cockroaches have reached their maximum size.

I was also told that, in a pinch, when cockroaches cannot be obtained, the fishermen use the larvae of the dirt-dauber (Sceliphron) and also large lepidopterous larvae found in stems of the giant ragweed.

Note on Unusual Nests of Trypoxylon politum Say

By Martin H. Muma and Walter F. Jeffers,
College Park, Maryland

The pipe-organ builder, *T. politum* Say, is one of the more interesting of our native mud-dauber wasps. Its finely striated tubular nests, often seen on the walls of deserted or little used sheds and barns are commonly five inches in length. They occur in groups which often are composed of several layers. Occasionally the nests are found in odd situations and are of unusual construction. Phil Rau in 1928 stated that this species in one instance had utilized a corner of woodwork, building a nest twenty inches long.[1]

While studying the food habits of several mud-dauber wasps the authors discovered similar nests on abandoned window frames. In this case several long tubes had been built in the guide-groove of the frames leaving only the front surfaces of the tubes exposed. Three of the nests were measured; one was ten inches long, one twenty inches and the longest twenty-five inches. It is interesting to note that all of the unusual nests, the one observed by Mr. Rau and those described here, were multiples of the five inch tube commonly built. This seems to indicate that the tendency to construct nests of uniform length is inherent even though the tubes are placed end to end rather than side by side.

[1] Rau, Phil, 1928, Field Studies on the Behavior of the Non-social Wasps, Trans. Acad. Sci. St. Louis, 25 (9); 325–489.

Notes and News in Entomology

Under this heading we present from time to time short reviews, notes, news and comments on entomology throughout the world. Contributions from readers are solicited and will be acknowledged when used.

Hovanitz,[1] the student of butterfly population analysis, has presented another interesting analysis for the case of the genetic and ecological relationships of the yellow and orange races of *Colias chrysotheme* in California. The two races differ in color, number of broods, diapause, preferred food-plants (alfalfa versus red clover) and somewhat different ecological niche. Genetical analyses show that hybridization occurs readily and that some genes are and some genes are not readily transferred from one race to the other. In nature, hybrid intermediates reach 10 per cent of the population in certain localities. This is one of the many cases where the question of species versus race is difficult to decide; Hovanitz lists them tentatively as races because it is possible to interchange a certain number of genes from one to the other. In nature the two tend to remain distinct, and the author lists a number of possible ecological and genetical reasons for this.

A more comprehensive analysis of the genetical variations and hybrids in *Colias eurytheme, eriphyle,* and *philodice* has recently been presented by Gerould.[2] This large paper covers breeding experiments from 1911 to 1942, the whole history of the migration of *eurytheme* to the eastern and northeastern states and the resultant effects in terms of natural hybrid populations. Of particular interest are the two beautiful color plates (35 figs.) showing the hybrids obtained by crossing *C. philodice* x *eurytheme* and by backcrossing such a known hybrid to parental stocks. These two papers will be of interest to everyone who tries the extremely difficult job of sorting mixed unknown lots of our Sulphur Butterflies.

Keegan[3] has described and given photomicrographs of the

[1] Biol. Bull., 85: 44–51. 1943.
[2] Proc. Amer. Phil. Soc., 86: 405–438. 1943.
[3] Trans. Amer. Micr. Soc., 62: 194–199. 1943. See also Penn, Jour. Parasit., 28: 277–283. 1942.

embryos of *Kiricephalus coarctatus* from the Indigo snake. This is a pentastomid worm; a peculiar and little-studied group of uncommon parasites in which the adult has the general appearance of an earthworm and lives in the lungs and coelom of snakes, but the embryos look like little mites with four peg-legs. For want of a better place they are nowadays put next to the Acarina. The embryos resist cold well but succumb rapidly to mammalian body temperatures and to drying. This suggests a cold-blooded aquatic animal as the still unknown intermediate host.

Alexander [4] (1943) continues the physiological studies of the flashes of fire-flies—a subject that has received intensive study by a number of physiologists in recent years.[5] Apparently the chemical precursor, "luciferin," is produced steadily, and the mechanism (flash) is set-off by the sudden entrance of oxygen. This implies that the control of flashing is in the tracheal end-cell system. In a sense this clarifies the question of how the beetle may control the flash but we are still uncertain as to how any insect can more or less voluntarily control the tracheal end-cell system.[6]

Of more general interest is Squire's recent indictment of the light-trap method of studying phototropism in insects.[7] Squire analyzes particularly the question of fatigue or rapid loss of phototropic potential on exposure to light. Since this fatigue may quickly produce a drop in response of more than 90 per cent (the moth, *Platyedra gossypiella*) it can be a bad source of error in studies of phototropism if not carefully controlled. He severely criticizes all analyses of light-trap data that do more than compare the relative efficiency of various types of traps. As he says, "What the experimenter with light traps really studies is light traps by means of phototropism and not photo-

[4] Journ. Cell. & Comp. Physiol., 22: 51–71. 1943.
[5] See also Harvey, "Living Light," Princeton Univ. Press. 1940.
[6] See Wigglesworth, "Principles of Insect Physiology." Dutton & Co. 1939, and especially Bult, T., "Over de Beweging der vloeistof in de Tracheolen der Insecten," Dissertation: Von Gorcum & Co., Assen, 143 pp. 1939.
[7] Bull. Ent. Res., 34: 113–116. 1943.

tropism by means of light traps. The latter can be investigated only by direct observation of the reaction of the whole of a known body of living material, and not by counting the trapped portion of an unknown aggregate. The light trap tells us very little about the reactions of the trapped individuals and nothing about those that were not trapped. It is equally plain that the question of fatigue must be taken into account in any method of investigating phototropism. The light-trap method fails to do so and therefore stands indicted as unscientific and the extensive literature which it engendered as worthless." Strong words those, but we can well profit by such severely critical analyses in entomology. A. G. RICHARDS, JR.

Current Entomological Literature

COMPILED BY THE EDITORIAL STAFF.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of Journals given at the end of the literature. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—**Fenton, F. A.**—The insect pest record for Oklahoma. [Proc. Okla. Acad. Sci.] 21: 25–28. **Frost, S. W.**—An observation box for solitary bees and wasps. [12] 36: 803–804, ill. **Hamlin,** John Calhoun, 1896–1943.—Obituary by W. R. Walton. [12] 36: 812, photo. **Knowlton & Wood.**—Seasonal insect food of the western chipping sparrow. [119] 30: 783–85. **Little, E. L.**—Common insects on Pinyon. [6] 41: 239–52. **Mosely, M. E.**—The preparation of insects for the microscope with special reference to Trichoptera. [9] 76: 227–34, cont. **Reid, W. M.**—A

simple technique for the transfer of small objects. [Trans. Amer. Micro. Soc.] 61: 423, ill. **Sanders,** George Ethelbert, 1884–1943.—Obituary by J. J. Davis. [12] 36: 811–12, photo. **Valentine, J. M.**—Insect taxonomy and principle of speciation. [91] 33: 353–58. **Weiss, H. B.**—The Journal of the New York Entomological Society, 1893–1943. [6] 41: 285–94.

ANATOMY, PHYSIOLOGY, MEDICAL—**Flanders, S. E.**—The rôle of mating in the reproduction of parasitic hymenoptera. [12] 36: 802–803. **Haydak, M. H.**—Nutrition of the wax moth larvae, vitamin requirement. I. Requirement for vitamin B1. [Proc. Minn. Acad. Sci.] 9: 27–29, 19–41. **Pilano, F.**—Notas sobre entomologia medica Venezolana. I. Flebetomos transmisores de Leishmaniasis tegumentaria en el Valle del Yaracuy. [46] 2: 99–102. **Whiting, P. W.**—Intersexual females and intersexuality in Habrobracon. [92] 85: 238–43, ill. **Yust, Nelson & Busbey.**—Comparative susceptibility of two strains of California red scale to HCN, with special reference to the inheritance of resistance. [12] 36: 744–49.

ARACHNIDA AND MYRIOPODA—**Bailey & Keifer.**—The tomato russet mite, Phyllocoptes destructor Keifer: Its present status. [12] 36: 706–12, ill. **Chickering, A. M.**—Twenty-one n.sps. of Dipoena from Panama (Theridae). [Trans. Amer. Micro. Soc.] 61: 329–78, ill. **Hungerford, H. B.**—The tropical rat mite in Kansas. [103] 16: 154. **Kaston, B. J.**—Supplementary notes on fam. names in the order Araneae. [119] 30: 765–68. **Marshall, R.**—Hydracarina from California. II. [Trans. Amer. Micro. Soc.] 61: 404–15, ill. (*). **Neivell, I. M.**—A new sironid from No. America (Opiliones). [Trans. Amer. Micro. Soc.] 61: 416–22, ill.

SMALLER ORDERS AND ORTHOPTERA—**Banks, N.**—Neuoptera of Northern S. America. [46] 2: 59–78, ill. (*). **Dexter, R. W.**—Anurida maritima: An important sea-shore scavenger. [12] 36: 797. **Hughes-Schrader, S.**—Polarization, kinetochore movements, and bivalent structure in male mantids. [92] 85: 265–300. **Montgomery, E.**—Records of Ohio dragonflies. [43] 43: 267–70. **Mosely, M. E.**—(See under General.) **Traver, J. R.**—New Venezuelan mayflies. [46] 2: 79–98, ill.

HEMIPTERA—DeLong, D. M.—A n. gen (Ascius) & 2 n. sps. of leafhoppers closely related to Flexamia. [43] 43: 250–51, ill. **Harris, H. M.**—Additions to the S. Dakota list of Hemiptera. [103] 16: 150–53. **Funkhouser, W. D.**—Synonymy of the Membracidae of Formosa. [6] 41: 265–75. **Jones, M. G.**—A brown aphis, Aphis (Dorsalis) cognatella, sp. n., found on spindle tree. [22] 34: 213–24, ill. **Nelson, H. D.**—The position of rostralis of the California red scale feeding on lemons. [12] 36: 750–51. **Smith & Knowlton.**—The aphid gen. Drepanaphis. [80]59: 171–76, ill. (*k).

LEPIDOPTERA—Field, W. D.—Racial variation in Strymon columella (Lycean). [103] 16: 153. **Forbes, W. T. M.**—Revisional notes on the Danainae (Supplement). [6] 41: 295–304, ill. (*). **Hinton, H. E.**—The larvae of Lepidoptera associated with stored products. [22] 34: 163–212, ill. (k). **Lichy, R.**—Documents pour servir a l'etude des Sphingidae do Venexuela. Une aberration de Protanbulyx strigilis. [46] 2: 103–6. (*). **Remington, C. L.**—The Rhopalocera of Principia College. [Trans. Ill. Sta. Acad. Sci.] 36: 179–80. **Stallings & Turner.**—A new U. S. record [for Hypota redtenbacheri] [103] 16: 154.

DIPTERA—Alexander, C. P.—Records & descr. of N. Amer. craneflies. IV. Tipuloidea of the Yellowstone Nat. Park. [119] 30: 718–64. (*). **Coe, R. L.**—Swarming of Sepsis cynipsea. [8] 79: 251. **Frost, S. W.**—Three new species of Diptera related to Agromyza pusilla. [6] 41: 253–63, ill. (k). **Hodgen, B. B.**—Aedes aegypti, the yellow fever mosquito in Oklahoma. [103] 16: 154. **Lindquist & Deonier.**—Seasonal abundance & distribution of larvae of the Clear Lake gnat. [103] 16: 143–49, ill. **Mailen, T. H.**—Seasonal occurrence and the effect of host attractiveness on the abundance of stable flies and horn flies on cattle. [Proc. Okla. Acad. Sci.] 21: 19–22. **Portman, R. W.**—New mosquito records for Colorado. [103] 16: 155. **Roth, L. M.**—A key to the Culex of the southeastern U. S., by male genitalia. [103] 16: 117–33, ill. **Snow, W. E.**—Laboratory feeding of Culicidae. [Trans. Ill. Sta. Acad. Sci.] 36: 181–82.

COLEOPTERA—Blackman, M. W.—New sps. of Amer. Scolytoid beetles, mostly Neotropical. [50] 94: 371–99, ill. **Chamberlin & Callenbach.**—Oviposition of June bettles and

the survival of their offspring in grasses and legumes. [12] 36: 681–88. **Chamberlin, Fluke & Callenbach.**—Species, distribution, flight and host preferences of June beetles in Wisconsin. [12] 36: 674–80. **Glen, King & Arnason.**—The identification of wireworms of economic importance in Canada. [52] 21: 358–87, ill. (*k). **Hovey, C. L.**—Studies on Chion cinctus in Oklahoma (Ceramb.). [Proc. Okla. Acad. Sci.] 21: 23–24. **Kulash, W. M.**—The ecology and control of wireworms in the Connecticut River valley. [12] 36: 689–93. **Linsley, E. G.**—The date-stone beetle in California and Lower California. [12] 36: 804–805, ill. **Reinhard, H. J.**—Hibernation of the boll weevil. [Bull. Texas Agr. Exp. Sta.] 638: 23 pp., ill. **Sanderson, M. W.**—A n. subf. of Staphylinidae, the Pulicomorphinae. [103] 16: 134–42, ill.

HYMENOPTERA—Bequaert, J.—Color variation in the American social wasp Polistes canadansis, with descr. of two n. forms (Vespid). [46] 2: 107–24 (*S). **Burks, B. D.**—The No. Amer. parasitic wasps of the gen. Tetrastichus: a contribution to biological control of insect pests. [50] 93: 505–608, ill. (*). **Flanders, S. E.**—(See under Physiology.) **Frost, S. W.**—(See under General.) **Gahan, A. B.**—Revision of two gen. of chalcidflies belonging to the fam. Eupelmidae from N. & S. Amer. [50] 94: 339–69. **Hincks, W. D.**—Further nomenclature notes on Braconidae and Aphidiidae. [9] 76: 221–24. **Lloyd, R. W.**—Wasps robbing bee-hive. [8] 79: 258.

LIST OF JOURNALS CITED

6.—Jour. New York Entom. Soc. 8.—Entom. Monthly Mag. 9.—The Entomologist, London. 12.—Journal Economic Ent. 22.—Bull. Entom. Research. 43.—Ohio Jour. Sciences. 46.—Bol. Entom. Venezolana. 50.—Proc. U. S. Nat. Museum. 52.—Canada Jour. Research. 80.—Jour. Elisha Mitchell Sci. Soc. 91.—Jour. Washington Acad. Sci. 92.—Biological Bulletin. 103.—Jour. Kansas Entom. Soc. 119.—Amer. Midland Nat.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Wanted—Specimens of the genus Calendra (Sphenophorus) from North America. Will exchange Eastern U. S. Calendra or other Coleoptera for desired species. R. C. Casselberry, 302 Lincoln Avenue, Lansdowne, Penna.

Coccinellidae wanted from all parts of the world, especially South and Central America. Buy or exchange. G. H. Dieke, 1101 Argonne Drive, Baltimore, Md.

Coleoptera—Will exchange mounted and labeled specimens from North America. All groups except Rhynchophora. G. P. Mackenzie, 1284 Sherwood Road, San Marino, Calif.

Lepidoptera—Should like to hear from collectors interested in species from central Alberta and Saskatchewan. Would collect other Orders. Paul F. Bruggemann, R. R. 1, Furness, Sask., Canada.

Lampyridae of U. S. and Canada wanted from the South and West, especially Photinus and Pyractomena for revisional study. Buy or exchange. J. W. Green, R. D. 2, Easton, Pa.

FOR SALE

Arctic species of Macrolepidoptera at nominal prices

Richard J. Fitch

Lloydminster, Saskatchewan, Canada

A Catalogue of the Parasites and Predators of Insect Pests

prepared by the Imperial Parasite Service

under the direction of

W. R. THOMPSON, F.R.S.

The first instalment of this work, covering the insects of the world and containing rearing records published from 1912 to 1935 inclusive, is now in course of publication.

The following parts of the Parasite Host Catalogue (Section I), listing parasites under hosts, are now ready:

Part 1. Parasites of the Arachnida and Coleoptera, listing about 1300 species of parasites under about 1000 species of hosts (pp. ix and 151).

Part 2. Parasites of the Dermaptera and Diptera, listing about 950 species of parasites under about 600 species of hosts (pp. v and 99).

Part 3. Parasites of the Hemiptera, listing about 1500 species of parasites under about 1000 species of hosts (pp. v and 149).

Printed by the Multigraph Method, 8" x 10"

(approx. Crown 4to)

Bound in cloth covered boards

Price $2.00 each (Canadian)

Edition limited to 400 for general sale.

A descriptive circular, sample sheets and subscription forms for the whole work, which will comprise about 20 parts, will be sent on request.

THE IMPERIAL PARASITE SERVICE

Imperial Institute of Entomology,

228 Dundas Street, Belleville, Ont., Canada.